Children (and Some Adults) Overgeneralize Negative Concord: the Case of Fragment Answers to Negative Questions in Italian

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Abstract

Recent studies on language acquisition have shown that children may initially adopt a Negative Concord grammar also when this option is disfavoured or forbidden in the target language. If children overextend Negative Concord, they might do it not only in Double Negation languages, but also in Romance. This hypothesis will be tested by looking at Italian children's comprehension of negative fragments used as answers of negative questions: in this context, Double Negation readings typically arise in adult speakers of Italian. The experimental results show that Italian 5-year-olds prefer Negative Concord interpretations to a larger extend than the adult control group, supporting the idea that Negative Concord might initially be overgeneralized by young children.

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1 Introduction

When the distribution of negative indefinites is considered, languages vary depending on the licencing constraints they enforce: while in some languages, like Standard English, negative indefinites (e.g. nobody) can occur without being accompanied by extra negative elements, in other languages, as for example in Italian, they need to comply with specific licencing requirements, depending on their syntactic position.

Figuring out the properties of the series of negative indefinites in their target languages may not be an easy task for young children. In fact, both production (Miller 2012) and comprehension (Thornton et al. 2016) studies suggest that children may incorrectly allow Negative Concord (NC) in constructions where adults would instead select the Double Negation interpretation (DN). This fact points toward an initial overgeneralization of NC readings by children, who apply the grammatical mechanism behind NC also to constructions where NC is banned or at least strongly avoided by adults.

In this paper I try to capture children's tendency toward NC interpretation under the tentative hypothesis that the same grammatical operation that generates the NC readings in adults is initially available to children, even if this is not part, or it is marginal, in the adult grammar. The predictions of this hypothesis will be tested in Italian, looking at the grammatical contexts in which adults prefer a DN interpretation. The expectation is that Italian children would differ from adults in preferring instead the NC interpretations. This would replicate, also in Italian, the initial preference for NC interpretations already attested in English.

2 Negative Concord in Adults

The term Negative Concord has been in use since Baker (1970) and Labov (1972) to indicate some constructions where a series of elements carrying negative morphology can be stacked together, rendering only a single negative operator to the final semantic representation. While Standard English does not tolerate NC, most Romance languages do if negative indefinites are c-commanded by sentential negation, such as in post-verbal position. This is clearly illustrated by the different meanings of sentences (1) and (2) in Italian and English. Both sentences contain two negative elements, the negative marker *non* "not*"* and the negative indefinite *nessuno* "nobody". However, while (2) in Standard English can be interpreted with a Double Negation (DN) reading (see Blanchette 2018, for the alternation between Double Negation and Negative Concord), in the Italian sentence (1) only a single negation reading, the NC interpretation, is allowed.

(1) Io *non*$_{[OP¬]}$ vidi *nessuno*$_{[uneg]}$ = I saw nobody, *NC reading*
     I   neg   saw   N-body
(2) I did*n't*$_{[OP¬]}$ see *nobody*$_{[OP¬]}$ = I saw everyone, *DN reading*

The contrast in meaning between (1) and (2) illustrates the basic distinction between languages that allow NC and languages that do not, or at least not easily do unless other factors facilitate the NC reading that, however, it is still marked.

To account for the NC readings, a possibility variously explored in the literature is to assume a feature-checking operation that links (and deletes) the formal negative feature carried by the indefinite with the negative operator: while *nessuno* in (1) carries such an uninterpretable formal feature (indicate by the subscript $_{[uneg]}$) that must be checked against a c-commanding OP¬, *nobody* in (2) directly introduces a negative operator (OP¬) itself. The combination of the two negative operators in (2), one carried by *nobody* and the other by the negative morpheme *n't* thus generates the DN reading. This very general idea, initially proposed in Haegeman and Zanuttini 1996, has been further elaborated in several successive proposals (see Zeijlstra 2004, Moscati 2006, 2010, Haegeman and

Londal 2010), to which the interested reader is remanded.

For the purpose of this paper, a further distinction needs to be elaborated in order to isolate, within NC languages, a subgroup of languages that pattern together with DN languages in a limited set of environments. This subgroup is often referred to as *non-strict* NC (see Giannakidou and Zeijlstra 2017). In non-strict NC languages, DN is possible when the negative indefinite appears preverbally, arguably sitting in a functional position in the high IP or in the complementizer's layer. Consider again the following comparison between Italian and Standard English:

(3) $\cancel{\bigcirc}_{[OP\neg]}$ *Nessuno*$_{[uneg]}$ *non*$_{[OP\neg]}$ è venuto = everybody came, *DN reading*
    $\overline{\text{N-body} \qquad \text{neg}}$ is come

(4) *Nobody*$_{[OP\neg]}$ did*n't*$_{[OP\neg]}$ come = everybody came, *DN reading*

This time (3) and (4) receive the same DN reading. The negative indefinite carrying the negative feature in (3) is licenced by a higher c-commanding operator and the same holds also when the negative indefinite is left-dislocated is the new Information Focus position of the Left-Periphery (see Rizzi 2004). Consider the fragment answers in (5) and (6), when *nessuno*/nobody is uttered as an answer to a negative question:

(5) Q: Chi non è venuto ?
       who neg is came
       'who didn't come?'
    A: Nessuno   = Nobody, didn't come = Everybody came, *DN reading*
       'Nobody'

(6) Q: Who didn't come?
    A: Nobody   = Nobody, didn't come = Everybody came, *DN reading*

The comparison between Italian and English now shows that they both have the DN reading when the fragment is a negative indefinite paired with negation in the antecedent. This reading is expected if we adopt a sluicing analysis (Merchant 2001) of the fragments for (5A-6A), whose representation will be very similar to (3) and (4) with the elided antecedent in the IP.

We have then isolated a few contexts (illustrated in 3 and 5) where DN is possible in non-strict NC languages. They can thus be exploited to test if Italian children also generalize NC.

3 Negative Concord in Children: the Generalized Negative Concord Hypothesis

Although much research investigated the properties of indefinites and polarity items in child language (a.o. Tieu and Lidz 2016, O'Leary and Crain 1994, Thornton 1995, Moscati et al. 2016; Gualmini et al. 2008), studies focusing on negative indefinites and NC configurations are still very scattered. There are, however, indications that children may initially adopt a NC grammar also when this is partially in conflict with their target one. They come from both production and comprehension data in English.

In a recent corpus study, Miller (2012) analysed Sarah's spontaneous production available thorough CHILDES looking at, among other things, her use of NC sentences. Sarah produces some NC sentences, some of them reported in (7), to a proportion much higher than the one attested in her parents' speech. The same was also found by Thornton et al. 2016 in Adam's transcriptions, where Adam – but not his parents - used NC sentences as in (8).

(7) NC sentences in Sarah's Corpus
    a. She didn't have no clothes (Sarah, 3;7)
    b. They don't have that baby no more (Sarah, 4;9)
    c. I just don't want nothing in there. (4;0)
    d. I'm not scared of nothing. (4;7)
    (examples from Miller, 2012)

(8) NC sentences in Adam's Corpus
  a. I didn't do nothing. (3;5)
  b. I didn't call him nothing. (3;8)
  c. Because nobody didn't broke it. (4;5)
  d. I don't think I can do this no more. (4;8)
  (examples from Thornton et al. 2016)

The examples in (7) and (8) show that English-speaking children produce sentences that look like NC constructions, and they do so more often than their parents. Production alone, however, is not enough to ensure that the examples in (7) and (8) are instances of true NC. It could be possible, in line of principle, that Sarah and Adam actually intended a DN interpretation.

If English-speaking children are initially truly committed to a NC grammar, they will also systematically misinterpret DN sentences. Thornton et al. (2016) also run a comprehension study, testing sentences like (9):

(9) The girl [who skipped] did*n't* buy *nothing*
  a. *the girl didn't buy anything   (NC)   → Children's preferred interpretation
  b. the girl bought something   (DN)   → Adults' preferred interpretation

The sentence came after a story that made true and felicitous the DN interpretation in (9b). While adults had no troubles in accessing the DN reading, children instead rejected it preferring the alternative and marginal NC interpretation in (9a). Thornton et al. (2016) also controlled for syntactic locality, in order to exclude that NC readings stemmed from a general non-linguistic cognitive limit in processing two negations in one sentence. They found that if one negation was embedded in the relative clause, as in (10), children had no troubles in accessing the correct adult interpretation:

(10) The girl [who did*n't* skip] bought *nothing*   → Adults and Children

Since the only available evidence comes from English, it is possible that this early pattern is language-specific, perhaps due to norming pressure. However, it is also possible that what has been initially observed in English is part of a more general phenomenon that characterizes the early phases of language development across languages. This second possibility could be formulated in the following tentative hypothesis:

(11) The Generalized Negative Concord Hypothesis
  Negative Concord is initially part of the early grammar and it respects the general constraints on locality.

According to (11), children are expected to systematically misinterpret DN sentences and to produce them, even if they are not allowed in the target grammar. The prediction is that non-target NC interpretations are expected to surface i) in DN Languages and ii) in non-strict NC concord languages, as in the Italian examples in (3) and (5). Moreover, although being target deviant, the NC operation obeys to the same constraints that govern it in the adult grammars and it should be clause-bounded, with a few exceptions (e.g. embedding under Neg-Raising predicates[1]) that are the same as in the adult grammars that allow NC.

To test this prediction, a new experiment testing DN readings in Italian was designed using fragment answers. If what has been observed on English-children is something more than a language-specific property, and the HP in (11) is on the right track, we also expect that Italian children will over generate NC readings and accept them whereas adults tend to choose instead the DN reading.

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[1]A special case is given by Neg Raising predicates and subjunctive clauses. In Neg-Raising predicates the embedded clause contains a negative feature able to license the negative indefinite (see Collins and Postal 2018, for the syntactic approach to Neg Raising).

4 A Preliminary Survey on DN in Fragments

Italian is considered to be a non-strict NC language since it allows DN readings when a negative indefinite sits in a high clausal position. Assuming that fragment answers convey new information and occupy a Focus position in the Left-Periphery, it is unsurprising that they receive a DN interpretation if the antecedent also contains a negative operator. This should be the preferred reading of (5).

The interpretation of fragment answers to negative questions has been recently investigated in more depth. Recent studies on Catalan and Spanish (Espinal et al. 2015; Espinal and Tubau 2016) revealed that DN and NC readings may alternate in fragments used in contexts similar to (5) and additional factors, as for example the prosodic contour, could favour the NC reading.

In absence of any specific study in Italian on the interpretation of NC in fragments, a preliminary on-line questionnaire was prepared in order to assess if adult speakers of Italian indeed prefer the DN reading in the context of fragments used to answer negative questions. It consisted of 12 multiple-choice questions, asking what the meaning of an exchange similar to (5) was. An actual example is given in (12) and the respondent's task was to choose, between the three options in (13), the one that according to them corresponded to the meaning intended by the second speaker:

(12) Paolo and Alfonso meet in a bar.
      Paolo: *"I've been watching the Olympics on TV, but I stop watching before the high jump*
             final. Who <u>didn't</u> jump above 2m?"
      Alfonso: *"Nobody"*.

(13) Option A. Alfonso says that everybody jumped above 2m   (DN)
      Option B. Alfonso says that nobody jumped above 2m   (NC)
      Option C. Alfonso says that only someone jumped above 2m   (existential)

Among the three options in (13), only Option A corresponded to the DN reading. Option B was instead the NC reading and Option C was only inserted as a filler. 13 participants took part in this preliminary study and the proportion of DN answers (e.g. Option A in 13) was 96.1 %. There was also very little individual variation across participants, with 9 of them always choosing thee DN interpretation and 4 choosing it at a rate above 80%.

On the basis of these results, we may assume that adults favour the DN reading in negative fragments. However, the fact that they prefer (13A) over (13B) does not warrant that the NC reading is totally unavailable. We will come back to this later, when we consider the performance of the adult control group in the Truth-Value task. We turn now to the experimental procedure used to test DN with young children.

5 The Experiment

5.1 Method and Materials

In order to test children's interpretation of fragment answers after negative questions, a Truth-Value Judgment Task (Crain and Thornton 1998) was designed. Participants heard a short story, narrated with a sequence of pictures, that was followed by a brief exchange between two puppets: the first always asked a question and the second answered it.

There were two experimental conditions: in *Condition 1-Fragment*, the second puppet answered the target negative question with a negative fragment, that was true or false depending on the story context, under the DN reading. Children had to judge whether the puppet correctly answered to the question and said it "right" or "wrong". A similar judgment was also asked to a second control question. This latter question was a negative question half of the times and it was answered with a proper noun. The control was included to determine if children were paying attention to the presence of negation in the question. To illustrate the procedure, consider the following example:

(14) *Condition 1-Fragment*
There are three Smurfs and they are discussing how to reach a party that Smurfette is organizing. They realize that the party is far away and that they cannot reach it simply by foot. So, they decide to use a small truck. But their truck is too small and it cannot fit them all, but only two of them. At this point, they decide not to go. However, one of the Smurfs, Grouchy Smurf, thinks again about it and he decides to stay home so that the other two can take the truck. Later, a friend came and once he heard the story, decided to lend Grouchy Smurf his car. At the end, they all meet at Smurfette's party.

Final outcome: everybody reaches the party.

(15) *Target exchange in Condition 1.*
Puppet 1:   Chi non è arrivato al party di Puffetta?
              '*Who didn't reach Smurfette's party?'*
Puppet 2:   Nessuno
              '*Nobody'* = TRUE under DN: everybody did

(16) *Control: negative question + proper noun*
Puppet 1:   Chi non ha preso il furgoncino?
              '*Who didn't take the truck?'*
Puppet 2.   Puffo Quattrocchi
              '*Grouchy Smurf'*

Notice that the story is articulated so to make salient, in its initial part, the NC reading ("nobody goes to the party"), satisfying the condition of Plausible Dissent (Crain and Thornton 1998). The Question-Answer-Requirement (Gualmini et al. 2008) was also satisfied since the answer in (15) constitutes a good answer to the Question-Under-Discussion.

The experiment also included a second condition. In *Condition 2-Relative* children also heard a short story but this time at the end of the story one of the puppets answered with a full bi-clausal sentence containing two negations: one in the matrix and one in the relative clause, with NC. This second condition, similar to Thornton at al. (2016), served to exclude that children avoided DN because they are simply unable to process sentences with two negative operators. It also served to test whether children apply a "free" NC, joining together negations belonging to different clauses, irrespective of the locality constraints that govern feature-checking. An example of Condition 2 is given in (17):

(17) *Condition 2-Relative*
There are two dwarves that want to buy a present for Snow White. They know that she loves swans, so they think that a swan will be the perfect present for her. They decide to ask their friend, a farmer, a swan each for Snow-White. However, before going to the farmer, one of the dwarves decides to eat a giant strawberry first. The other instead leaves immediately. Unfortunately, the farmer is not home yet, so the dwarf who went first goes to Snow-White empty-handed. The other dwarf reaches the farmer's house a bit later, when the farmer was finally home. This dwarf, the one that eat the strawberry, got a swan for Snow White.

(18) *Target exchange in Condition 2.*
Puppet 1:   Il nano che non ha mangiato la fragola, ha comprato un cigno?
              '*Did the dwarf [who didn't eat the strawberry] buy a swan?'*
Puppet 2:   Il nano che non ha mangiato la fragola non ha portato niente
              '*The dwarf [who didn't eat the strawberry] has bought nothing'*
                                        = True under 2 Neg reading

(19) *Control: negative question + proper noun*
  Puppet 1: Chi non ha magiato la fragola?
                'Who didn't eat the strawberry?'
  Puppet 2: Dotto
                '*Doc*'

Participants heard 12 target stories, 6 per condition, counterbalanced with respect to the expected Truth-Value. Six short filler-stories were also interspersed between the test items. The session was preceded with a naming task and a warm-up story to familiarize children with the procedure.

5.2 Participants

Twenty-four children and 17 adults took part in the experiment. Details about the two experimental groups are reported in Table 1.

Group	N	Age	Mean
Children	24	4;6-6;3	5;5
Adults	17	>18	23;4

Table 1. Numerosity, age interval and mean age for the participants in the two experimental groups.

5.3 Results

A first thing to consider is children's understanding of negative questions in the controls. Remember that the experimental materials also included negative questions answered by a proper noun. In the controls, both adults and children were at ceiling, confirming that negative questions *per se* do not pose any challenge to 5-year-olds.

We turn now our attention to the two experimental conditions. Figure 1 reports the proportion of answers that would be expected under a DN reading[2].
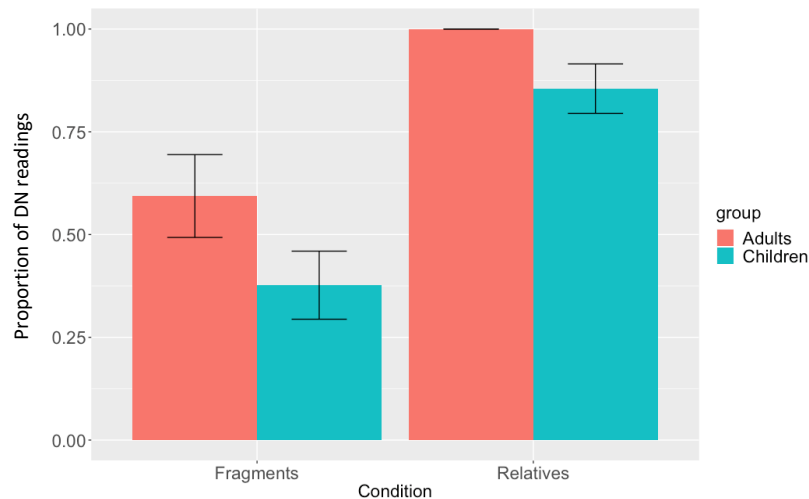

Figure 1. Proportion of DN readings in the two experimental conditions. Results from the Adult and the Child group. Error bars = 95% C.I.

Figure 1 shows that, in Condition 2-Relative, adults always give the judgments expected under the

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[2]In the figures, the generic label "Proportion of DN" is used for both conditions. This choice is made for simplicity. In the Relative Condition, however, the correct interpretation is not the one in which the two negative operators cancel each other out, as it is expected in DN readings.

interpretations with two distinct negative operators. In this condition, also children show a very similar behaviour. The overwhelming majority of their answers was the same as in adults, confirming that they are able to process sentences with two negative operators and that NC is blocked.

Interestingly, the proportion of DN is lower in Condition 2-Fragment: both adults and children gave judgments that were compatible with the NC reading. However, while the majority of adults' responses are consistent with the DN interpretation (DN=59.3%), children's preference was instead reversed, with only 37.7% of their answers compatible with the DN interpretation.

To check if the difference in the proportion DN answers between the two conditions and the two groups reach statistical significance, data were analysed in R running a Generalized Mixed Models with Condition and Group as predictors and Subject and Item as random effects. The outcome is reported in Table 2. The model reveals a significant main effect of both factors, and also a significant interaction between Group and Condition, confirming that the probability of giving a NC reading is higher in the fragment condition and that this probability is also higher in children than in adults.

Formula in R: Response ~ Group * Condition + (1 | Item) + (1 | Subject). AIC 424.6, BIC 450.5, logLik -206.8, deviance 413.6. Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	0.495	0.002	238.1	<0.001 ***
Group	-1.121	0.002	-539.4	<0.001 ***
Condition	19.307	0.002	8992.0	<0.001 ***
GroupXCondition	-16.715	0.002	-7784.8	<0.001 ***

Table 2. Fixed effects of Group and Condition. Logistic regression of probability of DN answers

This overall pattern of results is in line with the prediction of our experimental hypothesis, showing that NC is blocked in the Relative condition, while it is generally allowed in Fragments by children and, to a lesser extent, by adults too. With respect to this point, the adult performance deserves a further investigation. The aggregated results show that adults prefer the DN interpretation in the Fragment condition, in line with the results of the online questionnaire. However, the NC reading is not excluded and it is also allowed, to a lesser extent, by adult speakers of Italian.

This finding is interesting and the apparent optionality shown by adults deserve a further scrutiny. In Figure 2 the proportion of DN readings is reported separately for true and false trials. Remember that out of the 6 sentences in each condition, one half was associated with a story that made them true under a DN reading, and the other half with a story that made them false. Figure 2 shows that, while the truth-value that was associated with the DN interpretation made no difference in children, neither in the relative nor in the fragment condition, in adults instead this played a major role. Adults almost always selected the DN reading when this interpretation made the fragment true (Fragment/Acceptance). However, when the fragment's DN interpretation was False (Frag/Rejections) and a rejection would be expected, adults tended to accept it. The crucial observation here is that adults seemed to act cooperatively and avoid rejections. Their performance became similar to children, indicating that they could also access the NC reading.
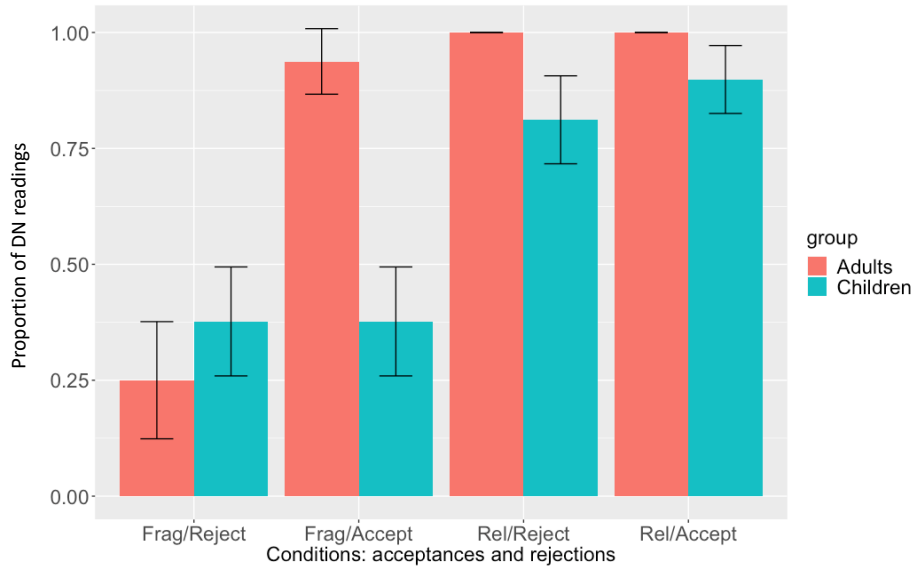
Figure 2. Proportion of DN readings in the two experimental conditions, split according to the expected answer. Results from the Adult and the Child group. Error bars = 95% C.I.

This behaviour is also confirmed by a scrutiny of the individual data reported in Figure 3. The cooperative behaviour characterizes the majority of adult's participants. A group of 11 subjects always accepted the fragment under a DN interpretation when it was true, but they switch to NC when this reading was the only one able to save the truth of the fragment. Another group, made of 4 participants (2,7,8,13) always accessed, instead, the DN reading, rejecting the fragment when it was false and accepting it when it was true under the same DN reading. Finally, only one participant showed a consistent NC behaviour, always rejecting the fragment when it was true under the DN interpretation and accepting it when it was false under the same reading.
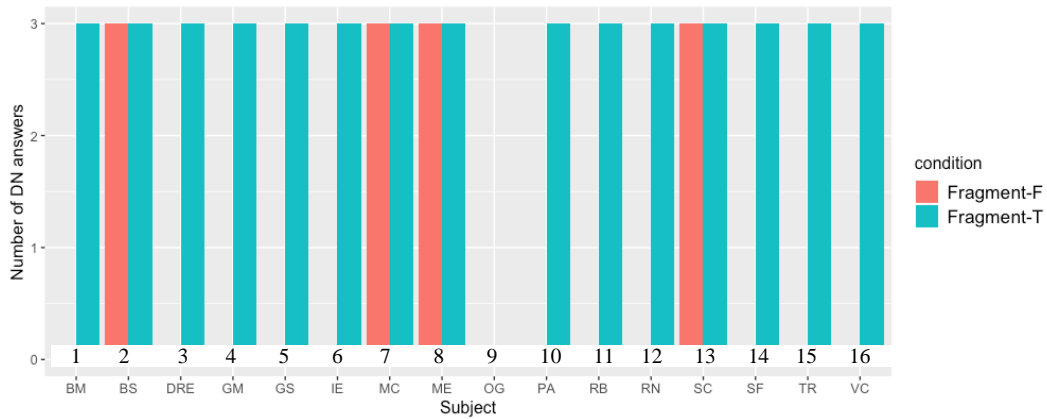

Figure 3. Individual number of DN readings in Condition 1- Fragment divided according to the target Truth-Value. Adult group.

6 Conclusions

The experimental results show that Italian children do not have problems in correctly interpreting negative questions and that they also perform like adults in complex sentences with two negative

operators, one in the matrix and one in the relative clauses. This latter control shows that the presence of multiple negative operators within the same sentence does not exceed the cognitive abilities of 5-year-olds.

Children's performance, however, differs from the adult one in negative fragments. Children avoid the DN readings, either when they are true or false in the story context. This result is in line with the previous findings in English, reported in Thornton et al. 2016. Like their English peers, Italian children also show a strong preference for NC readings, greater than in adults. This result adds further cross-linguistic evidence in support of the tentative hypothesis, put forth in this paper, that children avoid DN readings if they could instead apply the NC operation.

There are however several important open issues, some of them related with the adult response pattern. At first sight, adults seem to oscillate between the DN and the NC readings of fragments. In this respect, the case of Italian is not isolated: a growing body of research on NC in Romance languages shows that speakers may alternate NC and DN in function of finer grained interactions between syntax, prosody and pragmatics (Espinal and Prieto 2011, Espinal and Tubau 2016, Déprez et al. 2015). This study is one of the first collecting experimental data on Italian and more work is needed to capture the shift from DN to NC. However, both the results from the on-line questionnaire and the comprehension task indicate that the optionality between the two readings is somewhat restricted and that the DN reading seems to be the preferred interpretation, at least for negative fragments in the context of negative questions. Individual data also show that, while four participants always went for the DN readings, only one chose the NC readings. Moreover, the DN reading was always (with only that one exception) accepted when it was true and felicitous, whereas the alternative NC reading seemed to be a last-resort grammatical option.

It is possible that this type of (restricted) optionality could receive a principled explanation once other factors are considered, as in the aforementioned studies in Romance. This is certainly a direction to pursue in future research. One of these factors, however, could be the developmental course of language acquisition. Children's initial preference toward the NC readings could be an additional piece of the puzzle in explaining the adult pattern. Imagine that direct evidence in favor of DN or NC reading in selected environments is outside of the Primary Linguistic data. This could prolong the NC grammatical option, that will persist in some adults as a last-resort strategy or even as the main strategy, as in one of our adult speakers.

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